SUPERIOR UNIVERSITY

Task#14

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Topic: CURD function in database

Question#1:

➢ CURD function in database

CRUD is an acronym that stands for **Create, Read, Update** and **Delete**. These are the four basic functions of persistent storage in databases, providing a foundational framework for managing data. Here's a detailed look at each function:

1. Create

Purpose: To add new records to the database.

SQL Example:

```
INSERT INTO users (username, email, created_at) VALUES ('Hifza', 'hifzaofpk@gmail.com', NOW());
```

Explanation: This SQL command inserts a new row into the `users` table with the specified values for `username`, `email`, and `created_at`.

2. Read

Purpose: To retrieve existing records from the database.

SQL Example:

```
SELECT * FROM users WHERE username = ‘Hifza’;
```

Explanation: This SQL command selects and returns all columns for the row(s) where the `username` is 'john_doe'.

3. Update

Purpose: To modify existing records in the database.

SQL Example:

```
UPDATE users SET email = 'john_new@example.com' WHERE username = ‘Hifza';
```

Explanation: This SQL command updates the `email` field of the row(s) where the `username` is ‘Hifza’ to ‘hifzaofpk@gmail.com.

4. Delete

Purpose: To remove records from the database.

- **SQL Example:**

```
DELETE FROM users WHERE username = ‘Hifza’;
```

Explanation: This SQL command deletes the row(s) from the `users` table where the `username` is ‘Hifza'.

- **Practical Implementation in an Application**

Example: User Management in a Web Application

1. **Create (User Registration):**
   - A form on the website collects user information (username, email, password).
   - On form submission, the backend processes the data and executes an `INSERT` SQL command to add a new user to the database.

2. Read (User Profile):

- When a user logs in or views their profile, the backend retrieves user data using a `**SELECT**` SQL command.

- The retrieved data is displayed on the user's profile page.

3. Update (Edit Profile):

- Users can update their profile information (e.g., email or password).
- Upon submitting the changes, the backend executes an `**UPDATE**` SQL command to modify the user's information in the database.

4. Delete (Account Deletion):

- Users can delete their account.
- The backend processes the request and executes a `**DELETE**` SQL command to remove the user's data from the database.

Benefits of CRUD Operations

- **Simplicity:** CRUD operations provide a straightforward framework for interacting with the database.
- **Consistency:** Ensures consistent data handling across different parts of the application.
- **Maintainability:** Simplifies the codebase, making it easier to understand and maintain.

Conclusion

CRUD operations are essential for any application that interacts with a database, forming the foundation of data manipulation and management. By using these operations, developers can efficiently handle the creation, retrieval, updating, and deletion of data, ensuring that the application remains functional and responsive to user needs.